Predicting salmonid response to the removal of the Elwha River dams

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The Elwha River dams have disconnected the upper and lower Elwha watershed for over 90 years. This has resulted in a disruption to upstream salmonid migration and a "loss" of 90% of the salmonid habitat. The dams have also interrupted the downstream movement of both sediment and wood, leading to such inputs being dominated by local sources (e.g., bank erosion and avulsions). The current salmon habitat, as well as salmonid abundance and distribution, reflects these changes. Current salmonid populations (several of which are hatchery-dominated) are either dramatically smaller than estimated historical population or extirpated. Nevertheless, salmonid populations do persist below the dams in part because channel incision has not been significant, and floodplain habitats remain an important component of the Elwha River ecosystem. Dam removal will (1) reconnect upstream habitats increasing salmonid carrying capacity, and (2) allow the downstream movement of sediment and wood leading to long-term aquatic habitat improvements. Both large-scale changes will allow salmonid populations to rebuild on a watershed-scale. We hypothesize that the salmonid recolonization will be concentrated in several large alluvial valleys in the Middle and Upper Elwha.